

Working Paper to the Baltic Fisheries Assessment Working Group Meeting, April 2005

**FishFrame Baltic Sea**  
**Status and documentation of web application, tests and calculations.**

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## **Abstract**

FishFrame has since WGBFAS 2004 been tested, documented, presented and developed further to meet the requests put forward by the working group and users from the Baltic Sea countries. This work is presented herein and ideas and recommendations for future use and work are discussed.

The system has been used extensively by the users for uploading historic and 2004 data, resulting in 46,206 page hits. Three releases (3.0, 3.1 and 3.2) has added new functionality and fixed bugs. The system now stores 8648 station with 2,649,386 length measures and 340,803 age readings.

The testing is finished and documented. The testing was successful and FishFrame is now ready to be used in full scale. I.e as data provider to the assessments delivering sets of commercial data (discard, retained, CANUM, WECA etc.). The authors do however recommend that a review should be conducted by scientists that have not been taking active part of the development. The calculation procedures have been documented to meet such a review.

The relations to other international fisheries datawarehouses are discussed.

Recommendations are given in relation to using FishFrame for estimating assessment input, and as basis for other analysis.

## **Introduction**

This status paper together with the documents listed in the references section provides the full and updated documentation and description of FishFrame.

### **History**

FishFrame Baltic Sea (formerly known as BaltCom) is the result of an international cooperation among all the countries around the Baltic Sea. The development was initiated in 1999 and was part of an EU Study project (98/024) and sponsored partly by EU.

FishFrame Baltic Sea came out in version 1 in January 2002 and was presented at the WGBFAS in April 2002. At that meeting it was decided that FishFrame should be used in 2003 for estimating the discard for Baltic cod. The intersessional work until 2003 was primarily used to upgrade FishFrame to a new platform (.Net). Version 2 was released in April 2003 and successfully used to estimate discard for the cod stock assessments. Two additional minor releases were rolled out during 2003. In spring 2004, the Version 3.0 was only demonstrated as a release candidate because other projects had prevented the developers from finishing the final development and tests. On the basis of this release candidate the working group recommended that:

- Thorough documentation and tests of calculation procedures should be provided.
- The countries should review this documentation.
- The WGBFAS should decide in 2005 whether or not to base the 2006 assessment input of commercial data entirely on FishFrame.

In October 2004 the version 3.0 was released and a workshop was held in Riga with participation of all the Baltic Sea countries. Two addition releases (3.1 and 3.2) have been rolled out in 2005 preparing the system for external revision and full implementation.

FishFrame was cloned in January 2005, resulting in several FishFrame “clones”: One for the Baltic Sea, one for the North Sea and one called Fanta Sea with artificial data for demonstrational purposes. Two derived applications based on FishFrame clones are under development: FishFrame Acoustics that will be handling the data storage and processing of data from international acoustic surveys. FishFrame Acoustics is to be released before October 2005. The other application is made in cooperation between DIFRES and ICES HQ. The name of the application will be FishFrame InterCatch. It will be used to document national input data and processing done at the ICES WG level. InterCatch will be out in a beta-release for the ASC 2005 and implemented in 2006.

## **Status**

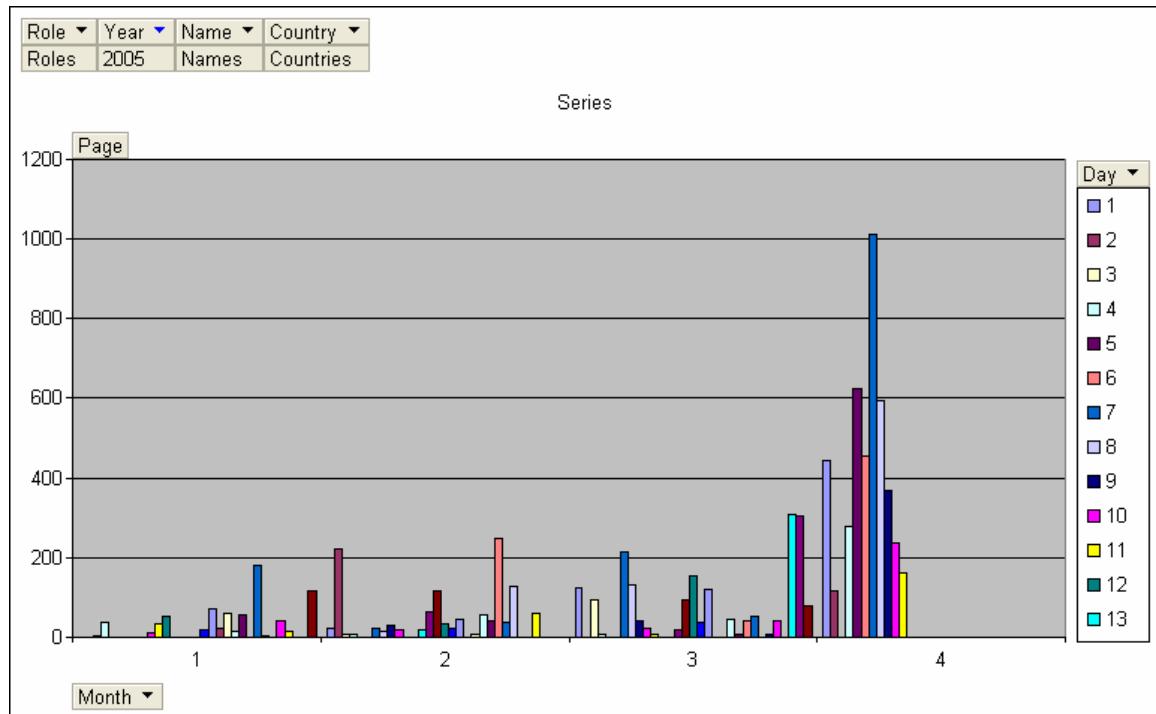
### **Activity**

The system has been logging user activity since version 2. This is not done to monitor the actions of the single users. It is done so user action analysis can be conducted to improve the user interface. Abuse of the system such as attempts to hack the system or copy all raw data out of the data browser can also be revealed using the log. Only administrators have access to the activity reports. Activity is measured in “page hits” e.g. web pages requested by a user.

46,206 page hits have been logged since January 2003. 35,483 since April 2004.

33 of the 45 users have made more than 30 page hits while 7 users have made more than 1000.

The activity day by day during the last four month up to the WGBFAS meeting in 2005 is displayed on the diagram on Figure 1. The increasing activity during the last 14 days is evident and corresponds to the dates where most of the countries finished their uploading of 2004 data. The activity by country for all years can be seen in Figure 2.



**Figure 1.** Activity day by day during the last four months up to the WGBFAS meeting in 2005.

Activity				
Role	Year	Name	Month	Day
Roles	Years	Names	Months	Days
Drop Column Fields Here				
Country	Page			
Denmark	10678			
Estonia	262			
Finland	849			
Germany	2145			
Latvia	1689			
Lithauania	423			
Poland	698			
Russia	39			
Sweden	20867			

**Figure 2.** Activity by country.

## Data

The data in FishFrame are:

- Landing statistics: Official, Area misreporting and unallocated.  
Aggregated by Country, Year, Quarter, Area, Species, Size sorting and Fishery.
- Sampling of catches onboard commercial vessel.  
Raw data.
- Marked sampling.  
Raw data.
- International trawl surveys (from ICES DATRAS).  
Raw data.
- Accessory information such as definitions of stocks and fisheries.

## Coverage

The system now stores 8648 station with 2,649,386 length measures and 340,803 age readings. The data are from 1995 to 2004 (Figure 3). The sea/harbour samplings are practically complete for 2004 but sparser for the previous year. A few countries have completed their upload of historic data. The marked samplings are far from complete and some countries have only uploaded cod data from sea sampling although all species were worked up on board. Only two countries have uploaded marked samplings, one of them only for cod.

It should however be noted that not all countries do marked samplings and several countries have not made onboard sampling all years.

Samples										
Quarter ▾	Area ▾	Sampling Type ▾	Fishery Set ▾	Fishery ▾	Gear ▾					
All	All	All	Fishery stratification 1	All	All					
Year ▾	Country ▾									
	DEN	EST	FIN	GFR	LAT	LIT	POL	RUS	SWE	Grand Total
Year ▾	Samples	Samples	Samples	Samples	Samples	Samples	Samples	Samples	Samples	Samples
1995	60			5	38		13		90	206
1996	293			4	202		3		317	819
1997	438				73		109	223	120	963
1998	350	24			28		168	195		765
1999	258			112	43					413
2000	276	89			338			193	361	1257
2001	325	49			270				288	932
2002	302		76	129	136					643
2003	327		297	181	103		36		192	1136
2004	588	1	150	163	86	1	61		464	1514
Grand Total	3217	163	523	594	1317	1	390	611	1832	8648

**Figure 3.** Stations (Sea+Harbour+Marked) by country and year.

The landing statistics are practically complete for cod in 2004 (by fisheries stratification 1), since this is the only data that all countries have committed to upload at this stage. As seen on Figure 4; the data on other species and years are rather scattered. Only two countries have uploaded data for fisheries stratification 2 (Figure 5).

Landing statistics								
Area ▾	Quarter ▾	Fishery Set ▾	Fishery ▾	Size Category ▾				
All	All	Fishery stratification 1	All	All				
Country ▾								
		DEN	FIN	GFR	LAT	POL	SWE	Grand Total
Species ▾	Year ▾	Official Catch	Official Catch	Official Catch	Official Catch	Official Catch	Official Catch	Official Catch
Clupea harengus	2003	64568000						64568000
	2004	70334643					29277542	99612185
Gadus morhua	1996	47167000						47167000
	1997	35196000						35196000
	1998	23511000						23511000
	1999	37772000						37772000
	2000	3284796						3284796
	2001	2747448						2747448
	2002	1747553						1747553
	2003	1442198	8118000	4634000				14194198
	2004	19350530	1707434	5027000	15119758	14737214	55941936	
								992828000 992828000
Scophthalmus maximus	1994							1944942000 1944942000
	1995							2563601000 2563601000
	1996							2304316000 2304316000
	1997							1595445000 1595445000
	1998							1401688000 1401688000
	1999							1040563000 1040563000
	2000							644813000 644813000
	2001							556619000 556619000
	2002							413277000 413277000
	2003							274046000 274046000
Solea vulgaris	2000	712387						712387
	2001	520642						520642
	2002	538788						538788
	2003	272811						272811
	2004	357070						357070
Sprattus sprattus	2003		8975000					8975000
	2004		16576506					16576506

Figure 4. Landings by country and year for fisheries stratification 1.

Landing statistics								
Area ▾	Quarter ▾	Fishery Set ▾	Fishery ▾	Size Category ▾				
All	All	Fishery stratification 2	All	All				
Country ▾								
		GFR	POL	Grand Total				
Species ▾	Year ▾	Official Catch	Official Catch	Official Catch				
Gadus morhua	2004	6697817	15119751	21817568				

Figure 5. Landings by country and year for fisheries stratification 2.

## Quality

The checking procedure in connection with upload of data ensures a minimum data quality. The workflow also includes age-length and length-weight outlier analysis, this step however is optional and can be bypassed. 35 and 36 % of the data have been approved in the outlier analysis for length-weight and age-length relations respectively. More might have been approved in earlier versions of the upload files, since uploading of data overwrites by journey while the data status is overwritten by year and country.

An advanced data checker is under development and once finished this tool will enable the data owners to get extensive reports on the quality of the data from their country. The species coordinators will also be able to get an assessment of the data quality before using the data.

It is evident that there are errors in the data. When exploring the reports with age-length keys and standard length distribution for cod as an example; the ages are up to 99 year, the lengths are from 8 mm to 9.6 m and it is clear that a lot of data have been uploaded in cm instead of in mm. This seems only to be the case for some historic data.

## **Developments**

Three new FishFrame versions have been released since WGBFAS 2004:

- Version 3.0: October 2004
- Version 3.1: January 2005
- Version 3.2: April 2005

The development is tracked and managed in two documents: An unprioritized list of requested modules (Jansen & Degel, 2005d) and a prioritized list of development tasks (Jansen & Degel, 2005e). The tasks are smaller development work packages while modules are typically larger. The prioritization is done prior to the development of a new release. User requests and cost is the two main parameters used in the prioritization.

## **Recent**

The major new features implemented in the last three releases are:

- Improved data checker and error reports
- Improved security system
- New reports such as CPUE and discard fraction.
- Discussion forum
- User manual with documentation of calculations
- Test documentation
- Technical documentation

Several bug fixes and user interface improvement have also been made.

## **Future**

Highly prioritized new modules are:

- Advanced data checker.
- Improved geographical mapping facilities.
- Effort as new data type. Raising with effort instead of landings as a possibility.
- Browser independence.
- Extensive reporting system.

See Jansen & Degel (2005d, 2005e) for the complete list.

## **Tests**

### **Methods**

The system and in particular the calculations and aggregations has been tested. The test was done primarily with test data sets. The data sets were created so that all cases were covered. The test documentation (Jansen & Degel, 2005c) can be downloaded from FishFrame's documentation page, while the data sets are found under DataAction/Tools/TestDataSets in the menu.

Upload and data checks were tested using 27 data files. The errors in the files ranged from file and format errors (wrong file types, nonsense data, format errors, key value consistency between records, duplicate records) to errors in the fields (wrong data type, out of range, missing mandatory). Field errors were checked systematically, so that all fields were checked for all kinds of errors. The upload security and transaction rollback was checked. Finally error-free files were uploaded to ensure that the routines saving data in the database were working correctly.

Calculations and aggregations were tested with small datasets (one to three stations) and compared to results from manual calculations in excel. Some reports were also tested on larger real datasets and compared to the output from the Henrik Degel's SAS program which has been used to make the discard estimated for Baltic cod since 1996.

Finally the outputs (CANUM and WECA) from 2004 were compared with the 2004 data submitted by the countries.

## Results

### Upload & Validation

File	Test module	Expected result	Result
WrongExtensionDatafile.xxx	Upload	Rejection with proper description	√
WrongExtensionDatafile.zip			
EmptyDataFile_CS.csv			
EmptyDataFile_CS.zip			
NoSenseDataError_CS.csv	ASCII2XML	Proper error report with the right number of errors (counted as 23 because 13 are in 2 lines)	√
NoSenseDataError_LS.csv			
StartingWithASemicolonError_CS.csv			
StartingWithASemicolonError_LS.csv			
TooFewColumns_CS.csv			
CS_data_in_LS.csv			
LS_data_in_CS.csv			
TabDelimitedData_CS.csv			
KeyValueConsistency_34_Shown_as_23_Errors_CS.csv			
DuplicateRecord_1_Errors_LS.csv	Duplicate record checker + ErrorReport + Natural key report	Proper error report with the right number of errors + correct natural key report	√
DuplicateRecord_2_Errors_CS.csv			
TST011CS_HH_77_Errors_CS.csv	Primary XSD validator + ErrorReport + Natural key report + Enumeration report	Proper error report with the right number of errors + correct natural key reports + correct enumeration reports	√
TST011CS_HL_34_Errors_CS.csv			
TST011CS_CA_54_Errors_CS.csv			
TST011LS_L1_38_Errors_LS.csv			
TST011CS_0_Errors_CS.zip	Save to DB, DW + Set data status	Proper performance, no errors.	√
TST011CS_0_Errors_CS.csv			
TST011CS_0_Errors_CS.xml			
TST011LS_0_Errors_LS.csv			

TST011LS_CommaSep_0_Errors_LS.csv			
DEN01cs.csv			
Denmark 2003LS.csv			
1. Run: Test_Upload_Delete_all_CS.sql 2. Upload: TST011CS_0_Errors_CS.csv 3. Run: Test_Upload_Count_records_CS 4. Upload: TST011_Second_Upload_CS.csv 5. Run: Test_Upload_Count_records_CS	Save CS to DW	1. OK 2. OK 3. CI records are 803 to 807. 6 HH's, 286 HL's and 634 CA's. 4. OK 5. CI records are 803 to 808. 6 HH's, 295 HL's and 643 CA's.	√
1. Run: Test_Upload_Delete_all_CS.sql 2. Add: "SELECT 0/0" into the stored procedure "InsertHH" 3. Upload: TST011CS_0_Errors_CS.csv 4. Run: Test_Upload_Count_records_CS 5. Restore the stored procedure 6. Repeat step 1-5. Instead of changing "InsertHH" in step 2 change to a. "InsertCruise" b. "InsertHL" c. "InsertCA"	Transaction rollback in: Save CS to DW	1. OK 2. OK 3. "Data insert complete: An error occurred. Contact administrator" 4. No CI records. 0 HH's, 0 HL's and 0 CA's. 5. OK	√
1. Run: Test_Upload_Delete_all_L1.sql 2. Upload: TST011CS_0_Errors_LS.csv 3. Run: Test_Upload_Count_records_L1 4. Upload: TST011_Second_Upload_L1.csv 5. Run: Test_Upload_Count_records_L1	Save L1 to DW	1. OK 2. OK 3. 42 L1 records 4. OK 5. 37 L1 records	√
1. Run: Test_Upload_Delete_all_L1.sql 2. Add: "SELECT 0/0" into the stored procedure "InsertL1" 3. Upload: TST011CS_0_Errors_LS.csv 4. Run:	Transaction rollback in: Save L1 to DW	1. OK 2. OK 3. "Data insert complete: An error occurred. Contact administrator"	√

Test_Upload_Count_records_L1 5. Restore the stored procedure		4. 0 L1 records 5. OK	
Upload DEN01cs.csv logged on as testeditor	Security in: Save CS to DW	“Data insert complete: An error occurred. Contact administrator”	✓
Upload Denmark 2003LS.csv logged on as testeditor	Security in: Save L1 to DW		

## Aggregation & Calculation

### Standardized CANUM

Files & Actions	Module	Expected result	Result
1. Upload file “TST 99 Two stations no regression CS.csv”. 2. Release TST 1999. 3. Explore standardized CANUM in pivot table. 4. Compare to the output from the “old SAS procedure” (“Old SAS program.doc”, “testdataset04_2stations inputCS version 6.csv”).	FishFrameVB.Datawarehouse.Populate(..)  Cube & pivot table: StandardizedCANUM	Exactly the same result for discard. Landings cannot be compared, since the SAS program only calculates discards. See Figure 6 & Figure 7. The landing-part is tested under CANUM-test.	✓
1. Data for DEN 2003 are already in FishFrame, so no upload is needed! 2. Release DEN 2003. 3. Explore standardized CANUM in pivot table. 4. Compare discard estimates to the output from the “old SAS program” (“Old SAS program.doc”, “testinputdataDEN03v6.csv”).	FishFrameVB.Datawarehouse.Populate(..)  Cube & pivot table: StandardizedCANUM	Nearly the same result. Only minor differences that can be accounted for (differences in the ALK stratification). See Figure 8 and file “Old SAS program OUTPUT.doc”.	✓

StandardizedCANUM												
Fishery Stratification		Species										
Fishery stratification 2		All										
Country	Year	Quarter	Fishery	Area	Catch Category	Size Category	Age	1	2	3	4	Grand Total
Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	
TST	1999	3	Gillnet	26	discard	0		5	0	3	0	5
					landing	0			0	3	0	3

Figure 6. Test result for stCANUM

Output - (Untitled)												
The number of fish by age group(10*3)per 1000 t landed by year country quarter fishery area 322 09:48 Wednesday, March 23, 2005												
Obs	fishery	country	year	area	quarter	lage0	lage1	lage2	lage3	lage4	lage5	lage6
39	Gillnet	DEN	1999	24	3	.	.	.	.	.	.	.
40	Gillnet	DEN	1999	25	3	.	.	.	.	.	.	.
41	Gillnet	DEN	1999	26	3	0	0	0.077266	3.06490	0.15453	.	.
42	Gillnet	DEN	1999	27	3	.	.	.	.	.	.	.
43	Trawl	DEN	1999	22	3	.	.	.	.	.	.	.
44	Trawl	DEN	1999	23	3	.	.	.	.	.	.	.
45	Trawl	DEN	1999	24	3	.	.	.	.	.	.	.
46	Trawl	DEN	1999	25	3	.	.	.	.	.	.	.
47	Trawl	DEN	1999	26	3	.	.	.	.	.	.	.
Obs	lage5	lage6	lage7	lage8	lage9	lage10	lage11	lage12	dage0	dage1	dage2	dage3
39	.	.	.	.	.	.	.	.	.	.	.	.
40	.	.	.	.	.	.	.	.	.	.	.	.
41	0	0	0	0	0	0	0	0	0	5.49451	0	.
42	.	.	.	.	.	.	.	.	.	.	.	.
43	.	.	.	.	.	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.	.	.	.	.	.
45	.	.	.	.	.	.	.	.	.	.	.	.
46	.	.	.	.	.	.	.	.	.	.	.	.
47	.	.	.	.	.	.	.	.	.	.	.	.
Obs	dage3	dage4	dage5	pctage0	pctage1	pctage2	pctage3	pctage4	pctage5	pctage6	pctage7	pctage8
39	.	.	.	.	.	.	.	.	.	.	.	.
40	.	.	.	.	.	.	.	.	.	.	.	.
41	0	0	0	.	.	.	.	.	.	.	.	.
42	.	.	.	.	.	.	.	.	.	.	.	.
43	.	.	.	.	.	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.	.	.	.	.	.
45	.	.	.	.	.	.	.	.	.	.	.	.
46	.	.	.	.	.	.	.	.	.	.	.	.
47	.	.	.	.	.	.	.	.	.	.	.	.

Figure 7. Test result for stCANUM

StandardizedCANUM														
Fishery Stratification		Species		Catch Category										
Fishery stratification 1		COD		discard										
Country	Year	Quarter	Fishery	Area	Size Category	Age	0	1	2	3	4	5	7	Grand Total
DE	DEN	2003	1	Gill-/trapnet	22	0	3	126	13	1	143			
				Trawl/seine	22	0	30	1026	131	8	0	0	1195	
					24	0	1	395	37	0			433	
					25	0	3	106	107	0			216	
			2	Trawl/seine	22	0	61	4					65	
					24	0	537	1244	62				1843	
					25	0	0	33	92	8			133	
			3	Trawl/seine	22	0	217	1450	49				1716	
					24	0	99	67	9				175	
					25	0	63	466	83				612	
			4	Trawl/seine	22	0	52	59	829	25			965	
							52	1012	5803	612	17	0	0	7496

Figure 8. Test result for stCANUM

## CANUM

Files & Actions	Module	Expected result	Result
1. Compare and calculate the discarded and the retained part manually using the data from the	FishFrameVB.Datawarehouse.Populate(..)	Exactly the same results as the manual calculation.	✓

<p>pivot tables containing Landing statistics and stCANUM. The test is done for sole-kask in 2004 (Figure 9 to Figure 13).</p>	<p>Cube &amp; pivot table: CANUM</p>		
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Landing statistics				Size Category ▾		
Species	Year	Fishery Set		1	2	Grand Total
Solea vulgaris	2004	Fishery stratification 1				
				Official Catch	Official Catch	Official Catch
Country ▾	Quarter ▾	Fishery ▾	Area ▾	Official Catch	Official Catch	Official Catch
DEN	1	Gill-/trapnet	20	3583	964	4547
			21	1702	780	2482
		Trawl/seine	20	24493	6925	31418
			21	48542	33850	82392
	2	Gill-/trapnet	20	5848	1052	6900
			21	2849	3033	5882
		Trawl/seine	20	18986	2984	21970
			21	22245	18879	41124
	3	Gill-/trapnet	20	2223	569	2792
			21	3007	4079	7086
		Trawl/seine	20	8529	2343	10872
			21	12222	16945	29167
	4	Gill-/trapnet	20	1155	209	1364
			21	2629	1793	4422
		Trawl/seine	20	20520	9650	30170
			21	37211	37271	74482

Figure 9. Input for CANUM test.

StandardizedCANUM					
Fishery Stratification	Year	Catch Category	Data Source	Species	
Fishery stratification 1	2004	discard	Calculation	SOL	
			Age ▾		
			2	3	4
Country ▾	Quarter ▾	Fishery ▾	Area ▾	Size Category ▾	Number Number Number Number
DEN	1	Trawl/seine	21	0	951 58 29
					1616
					770

Figure 10. Input for CANUM test.

Standardized CANUM																				
Fishery Stratification		Year	Catch Category	Data Source	Species															
Fishery stratification 1		2004	Landing	Calculation	SOL															
				Age ▾		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
DEN	Q1	Trawl/seine	Area 20	0		428	669	760	477	114	164	50	50	37			31	37		
				1		234	752	574	421	185	151	38	38	8			9	8		
		Area 21		2		1507	823	798	361	386		38	38	76			76	76		
				0		967	1402	749	157	118	84	30		79	15	99		41		
				1		38	551	922	292	269	234	50		85	38	37	32	12		
				2		54	1592	1639	637	161	64	76	48		28	15	21	2	30	
	Q2	Trawl/seine	Area 20	1		153	305	458	915	76	76	153					76			
				2		1733	1116	57	76	204	158	7	251			14				
	Q3	Trawl/seine	Area 21	0		534	1141	1188	1442	386	294	117			150		31			
				1		184	564	1005	527	368										
		Trawl/seine	Area 20	2		2961	880	176	63								76	76		
				0		735	1053	702	125	216	327									
				1		615	1108	640	210	132	26							31		
				2		1062	1352	1220	401	223	146	51	47	21	21					

Figure 11. Input for CANUM test.

CANUM																
Stock	Year	Fishery Stratification	Catch Category	Data Source												
sol-kask	2004	Fishery stratification 1	Discard	All												
		Age ▾			2	3	4	8	Grand Total							
Quarter	Fishery	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number
Q1	Trawl/seine				78	5	2	85								
Q2	Trawl/seine				66											
Q3	Trawl/seine	22														

Figure 12. Test result for CANUM (discarded fraction).

CANUM																				
Stock	Year	Fishery Stratification	Catch Category	Data Source																
sol-kask	2004	Fishery stratification 1	Landing	All																
		Age ▾			2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Grand Total
Quarter	Fishery	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	Number	
Q1	Trawl/seine	2	72	103	86	32	22	18	5	1	6	2	3	2	2	2	356			
Q2	Trawl/seine	3	6	9	17	1	1	1	3					1					41	
Q3	Trawl/seine	72	93	109	50	24	10	3	2	1	1		1	2	1				369	

Figure 13. Test result for CANUM (retained fraction).

### Mean weight

File	Module	Expected result	Result
<ol style="list-style-type: none"> <li>Upload file “TST 99 Three stations two lengths no regression CS.csv”.</li> <li>Release TST 1999.</li> <li>Explore mean weights in pivot table.</li> <li>Compare to the screenshots in Figure 14, Figure 15 and Figure 16.</li> <li>Manually calculate the mean weights</li> </ol>	<p>FishFrameVB.Datawarehouse.Populate(..)</p> <p>Cube &amp; pivot table: MeanWeight</p>	Exactly the same results as the manual calculation.	✓

CS_MW										
Country	Length Class	Year	Quarter	Species	Spawning Type	Fishery Stratification	Fishery	Area	Catch Category	
TST	All	1999	All	Gadus morhua	All	Fishery stratification 1	All	All	All	
Drop Column Fields Here										
<b>Age</b>	Mean weight									
1		63,79								
2		83,08								
Grand Total		65,73								

**Figure 14.** Mean weight with Age on row axis

CS_MW										
Country	Age	Year	Quarter	Species	Spawning Type	Fishery Stratification	Fishery	Area	Catch Category	
TST	All	1999	All	Gadus morhua	All	Fishery stratification 1	All	All	All	
Drop Column Fields Here										
<b>Length Class</b>	Mean weight									
190		62,00								
200		80,58								
Grand Total		65,73								

**Figure 15.** Mean weight with length on row axis

CS_MW										
Country	Year	Quarter	Species	Spawning Type	Fishery Stratification	Fishery	Area	Catch Category	Size Category	
TST	1999	All	Gadus morhua	All	Fishery stratification 1	All	All	All	All	
Age										
	1	2		Grand Total						
<b>Length Class</b>	Mean weight	Mean weight	Mean weight							
190	62,00		62,00							
200	78,08	83,08	80,58							
Grand Total	63,79	83,08	65,73							

**Figure 16.** Mean weight with length on row axis and Age on column axis

## Age regressions

Files & Actions	Module	Expected result	Result
1. Upload file “TST 97 Two stations with regression CS.csv”. 2. Release TST 1997. 3. Explore Age-Length Relations in pivot table.	FishFrameVB.Datawarehouse.Populate(..)	As in Figure 17	√
	Cube & pivot table: CS_ALK		

Species	Spawning Type	Year	Quarter	Country	Area	Regression
All	All	1997	All	TST	All	Yes
		Age				
		2	3	4	Grand Total	
Length Class	Fraction	Fraction	Fraction	Fraction		
350	0,321831418	0,512093011	0,166075571		1	
450		0,815308726	0,184691274		1	
Grand Total	0,180414375	0,645330065	0,174255561		1	

Figure 17. Test result for age-length relation regression.

## Weight regressions

Files & Actions	Module	Expected result	
<ol style="list-style-type: none"> <li>Upload file “TST 97 Two stations with regression CS.csv”.</li> <li>Release TST 1997.</li> <li>Run query: SELECT Alpha, Beta FROM FishFrame_DW.dbo.Regression WHERE (Country = N'tst') AND ([Year] = 1997)</li> <li>Run query: SELECT LengthClass, Age, PartOfMeanWeight, PartOfWeightOfStrata FROM MeanWeight(1997, 'tst', 'Fishery stratification 1')WHERE LWRegression = 'Yes'</li> </ol>	<p>FishFrameVB.Data warehouse.Populate (..)</p> <p>Cube &amp; pivot table: CS_ALK</p>	<p>Action 3: As in Figure 18 Action 4: As in Figure 19</p>	√

FishFrame - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://ch-it03/FishFrame/FishFrame/ Go Links >

Select dataset to browse		Data browser   Reports   Analysis   Data action   Info & Help   Misc.
-Landing statistics -Aggregated	Alpha   Beta	0,000056   -1978,313842
-Commercial samplings -Sea -Harbour -Market		Back Forward
-Trawl surveys -Datras		

Done Trusted sites

**Figure 18.** Test result for length-weight relation regression.

FishFrame - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://ch-it03/FishFrame/FishFrame/ Go Links >

Select dataset to browse		Data browser   Reports   Analysis   Data action   Info & Help   Misc.
-Landing statistics -Aggregated	LengthClass   Age   PartOfMeanWeight   PartOfWeightOfStrata	450   4   58496276,8758610000   14967,8300359470
-Commercial samplings -Sea -Harbour -Market	350   3   21938,5457950000   30251,6176978525	
-Trawl surveys -Datras	350   4   7114,8335350000   14967,8300359470	
	450   3   258228360,9517220000   30251,6176978525	
	340   2   8351,6250000000   31,7063063063	
	440   4   29914178,5714270000   14967,8300359470	
	350   2   13787,5603620000   31,7063063063	
	Back Forward	

Done Trusted sites

**Figure 19.** Test result for length-weight relation regression.

## Weight based CPUE

File	Module	Expected result	Result
<ol style="list-style-type: none"> <li>1. Upload file “TST_98_CS.csv”.</li> <li>2. Explore CPUE in weight in pivot table.             <ol style="list-style-type: none"> <li>a. Set Area on row axis, select Fisheryset, Country and Year.</li> <li>b. Remove Area from row axis, select Fisheryset, Country and Year.</li> </ol> </li> <li>3. Compare the output with the content of the file “Test results for DiscardFraction and CPUE.xls”.</li> </ol>	<p>SQL view: “AS_CS_CPUE_CatchWeight_WithZeroObservations”</p> <p>Pivot table: “CS_CPUE_WeightPerHour”</p>	Exactly the same results.	√

## Weight based discard fraction

File	Module	Expected result	Result
<ol style="list-style-type: none"> <li>4. Upload file “TST_98_CS.csv”.</li> <li>5. Explore DiscardFraction in pivot table.             <ol style="list-style-type: none"> <li>a. Set Area on row axis, select Fisheryset, Country and Year.</li> <li>b. Remove Area from row axis, select Fisheryset, Country and Year.</li> </ol> </li> <li>6. Compare the output with the content of the file “Test results for DiscardFraction and CPUE.xls”.</li> </ol>	<p>SQL view: “AS_CS_DiscardFraction_CatchWeight_WithZeroObservations”</p> <p>Pivot table: “CS_DiscardFraction_Weight”</p>	Exactly the same results.	√

## Comparison of submitted 2004 data

Four countries could be compared; the rest had not completed their upload to FishFrame.

Country	Difference	Raising procedure differences <sup>1</sup>	Result
GFR	1-2 %		✓
POL	13 – 28 %	Calculation of overall mean weight explains exactly the observed differences.	✓
LAT	28 – 135 % Submit age = FF age +1	?	?
DEN	23 – 74 %	Handling of size sorting + ?	?

Note 1. Apart from differences in regression procedures and stratification of age-length keys.

## Documentation

The whole system has been documented. The documentation (Jansen & Degel, 2005a; Degel & Jansen, 2005b) can be downloaded from FishFrame's documentation page.

The only part that has not been documented is the apply-estimation. The reason for this is that this functionality will be moved into the coming FishFrame InterCatch system (see chapter below). If the users decide that they want to keep it in FishFrame Regional as well, then it will also be documented in the user manual.

## Relations to other systems

FishFrame is an international datawarehouse where data can be gathered and combined from different sources. It is *not* a database containing the source data.

## National databases

The national databases contain the source data. FishFrame only contains copies hereof. The countries still owns their data inside FishFrame and it is their responsibility to update them so that they match the source data.

## DATRAS

DATRAS contains data from international trawl surveys. The system is maintained by ICES HQ. FishFrame contains a copy of the DATRAS database and provides data browsing and reporting facilities for exploring the data.

## InterCatch

InterCatch is made in cooperation between DIFRES and ICES HQ. The system will be used to:

1. Document national inputs to fisheries and fish stock assessment at ICES level.
2. Document data processing done at the ICES level.
3. Ease data handling at the ICES WG level. InterCatch shall provide tools for complete processing from national input to final report.

InterCatch will be based on a FishFrame clone and will be out in a beta-release for the Annual Science Conference 2005. Implementation will take place in 2006.

The “regional FishFrame” can in the future feed FishFrame InterCatch with the national data at the aggregation level required by the species coordinators. The species to stock conversion, apply-estimation and generation of model input files will then be handled and documented in InterCatch.

The same facilities will be available in Regional FishFrame providing the user with a playground or sandbox for analysing the consequences of applying different applying strategies.

## **European Fisheries Data Collection (EFDC)**

Currently there is no relation between FishFrame and EFDC. It could be considered to provide tools in FishFrame for easing the member countries reporting of data to EFDC. However EFDC contains economical and logbook that is not present in FishFrame. Since the requests can require combination of different types of data, FishFrame can not presently provide facilities for all kinds of reporting to EFDC.

## **FishFrame clones**

FishFrame has been cloned into three “regional” FishFrame applications:

- FishFrame Baltic Sea
- FishFrame North Sea
- FishFrame Fanta Sea

The three clones only differ in the data content. There is no connection between the clones; the data are stored and the security is handled separately.

## **FishFrame Acoustics**

FishFrame Acoustics is building on HerSur and FishFrame technology. FFA will be handling the data storage and processing of data from international acoustic surveys. FishFrame Acoustics is divided into three stages. Stage 1 is the raw data (now stored in HerSur and BADII), stage 2 is calculations up to an aggregated level and stage 3 is the final calculation of the global stock size estimates. Stage 3 is to be released before October 2005.

## **Discussion & Conclusion**

FishFrame has proven to be able to produce the discard fraction of the input data to the assessment models. In order to expand the use to cover the retained part as well; the system needed properly testing and documentation. All testing carried out before WGBFAS 2005 was successful. The testing carried out during WGBFAS 2005 was successful for two countries. Two other countries data sets deviated substantially from the FishFrame output. These differences should be explored and explained in corporation with the data submitters as soon as possible, since they might represent errors in the data sets that the assessment will be based on.

Next step towards full implementation would be to evaluate the calculation procedures. This should be done by all involved countries.

The use and testing of FishFrame has until now only been on cod and sole. Herring and whitefish are handled slightly differently because the species to stock conversion not only depends on the area but also uses the spawning-type information. This case has not been tested separately. It is therefore recommended that such testing is performed and that relevant assessment biologists evaluate the handling of stock conversions.

Software that manipulate and calculate data for a scientific purpose, is not to be looked upon as “black boxes”, that one just have to trust, because it is made by a trustworthy person.

Accepting a “black box” as is not appropriate for scientific purposes. We have therefore chosen to make the source code public available for review, so that everything can be reproduced and tested. A scientific piece of software, or rather its output, can be viewed upon as a hypothesis. We would therefore suggest that scientific software should be reviewed like normal publications.

We would appreciate if a third part would test the application systematically, and we are ready to put forward everything needed to do so. It should not be necessary to implement the database in another place, a test on the existing setup would be sufficient.

The upload of data has been successful for all countries in 2004. Several countries however only finished few days before the WGBFAS meeting. To ensure that the expected level of data quality will be reached and that the stock coordinators and assessment biologists get time to work on the data before the meeting, we would recommend that data upload should meet a deadline one month before the meeting. This deadline also makes the process resistant to unforeseen technical problems. The late delivery of data by some countries was due to technical problems, mainly because of the work involved in the creation of national extraction programs. These programs can be expected to be reused in the future. We therefore expect the national data extraction, exchange file generation and upload process to be much easier in the coming year, making an earlier deadline possible.

The coverage of historic data is still too poor for most use of these data. We therefore recommend that the countries should make a coordinated commitment to completion of some or all of the years 1995-2003.

The data quality needs to be thoroughly assessed in the historic data. The species coordinators should be provided with an advanced data checker that enables them to assess the quality of their data set prior to the assessment. A tool to cover both of these tasks is under development and will be implemented in the next release. The tool will also further improve the initial data check that is performed during upload.

Based on the user feedback we have given priority to the development of some special modules: Improvement of the existing geographical mapping facility, so that it can also create points, pies, and bar charts on the maps.

Effort as new data type. Raising with effort instead of landings will be needed in future fisheries based assessments with focus on effort regulation.

Browser independence. Making the users free to choose the browser software that suits their own institutes IT-policy.

Extensive reporting system. The growing Baltic Sea data set is getting more and more interesting for other fisheries scientists than WGBFAS. National institutes and other ICES WG's performing ad hoc studies on discard, ecosystem management and area closure have already been wishing to use the data. This will require more reports and analysis. A system where users can define and save query reports could be a solution. This would naturally be under the existing data security rules. All relevant information for giving the background tabulations for the "Technical Reports" and "Final Report" to the EU Commissions in connection with the Data Regulation is included in FishFrame and it will be natural to take advantage of this when producing those national reports every second year.

External data access. Ownership of the data is by country. Users wishing to use data will have to get proper permissions. It is in everybody's interests that the data is used as much as possible and a smooth procedure for obtaining the required permissions is important. Therefore, it is relevant to develop a "data library" module, which manages the external use of FishFrame reports as well lend of data for use outside the database.

## **References**

Jansen T., H. Degel. 2005a. FishFrame User Manual. [www.FishFrame.org](http://www.FishFrame.org). 42 pages.

Degel H., T. Jansen. 2005b. FishFrame Exchange Format Specification. [www.FishFrame.org](http://www.FishFrame.org). 15 pages.

Jansen T., H. Degel. 2005c. FishFrame Test Documentation. [www.FishFrame.org](http://www.FishFrame.org). 12 pages.

Jansen T., H. Degel. 2005d. FishFrame Modules. [www.FishFrame.org](http://www.FishFrame.org). 2 pages.

Jansen T., H. Degel. 2005e. FishFrame Tasks. [www.FishFrame.org](http://www.FishFrame.org). 5 pages.